

IUBMB Enzyme Nomenclature

EC 4.2.1.52

Common name: dihydrodipicolinate synthase

Reaction: L-aspartate 4-semialdehyde + pyruvate = dihydrodipicolinate + 2 H₂O

For diagram [click here](#).

Other name(s): dihydropicolinate synthetase; dihydrodipicolinic acid synthase

Systematic name: L-aspartate-4-semialdehyde hydro-lyase (adding pyruvate and cyclizing)

Links to other databases: [BRENDA](#), [EXPASY](#), [KEGG](#), [ERGO](#), [PDB](#), CAS registry number: 9055-59-8

References:

1. Shedlarski, J.G. and Gilvarg, C. The pyruvate-aspartic semialdehyde condensing enzyme of *Escherichia coli*. *J. Biol. Chem.* 245 (1970) 1362-1373. [Medline UI: [70179416](#)]
2. Yugari, Y. and Gilvarg, C. The condensation step in diaminopimelate synthesis. *J. Biol. Chem.* 240 (1965) 4710-4716. [Medline UI: [66047459](#)]

[EC 4.2.1.52 created 1972]

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EC 2.7.2.4

Common name: aspartate kinase

Reaction: ATP + L-aspartate = ADP + 4-phospho-L-aspartate

For diagram [click here](#).

Other name(s): aspartokinase; AK; β -aspartokinase; aspartic kinase

Systematic name: ATP:L-aspartate 4-phosphotransferase

Comments: The enzyme from *Escherichia coli* is a multifunctional protein, which also catalyses the reaction of [EC 1.1.1.3](#) homoserine dehydrogenase.

Links to other databases: [BRENDA](#), [EXPASY](#), [GTD](#), [KEGG](#), [ERGO](#), [PDB](#), CAS registry number: 9012-50-4

References:

1. Black, S. Conversion of aspartic acid to homoserine. *Methods Enzymol.* 5 (1962) 820-827.
2. Paulus, H. and Gray, E. Multivalent feedback inhibition of aspartokinase in *Bacillus polymyxa*. I. Kinetic studies. *J. Biol. Chem.* 242 (1967) 4980-4986. [Medline UI: [68048401](#)]
3. Starnes, W.L., Munk, P., Maul, S.B., Cunningham, G.N., Cox, D.J. and Shive, W. Threonine-sensitive aspartokinase-homoserine dehydrogenase complex, amino acid composition, molecular weight, and subunit composition of the complex. *Biochemistry* 11 (1972) 677-687. [Medline UI: [72111297](#)]
4. Véron, M., Falcoz-Kelly, F. and Cohen, G.N. The threonine-sensitive homoserine dehydrogenase and aspartokinase activities of *Escherichia coli* K12. The two catalytic activities are carried by two independent regions of the polypeptide chain. *Eur. J. Biochem.* 28 (1972) 520-527. [Medline UI: [73028842](#)]

[EC 2.7.2.4 created 1961]

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